



## CT DEP Fact Sheet

October 2005

# Pressure Vacuum Vent Cap Test Procedures

### **What are pressure vacuum (PV) vent caps?**

A pressure vacuum vent cap, also known as a PV vent cap, is a pressure release device designed to minimize vapor loss while maintaining a safe pressure differential within the gasoline storage tank.

### **What test method is used to test PV vent caps?**

At the present time New Hampshire, Department of Environmental Services, "304 – PV Vent Cap Test Procedure" as presented in this fact sheet is the most commonly used test method accepted in Connecticut. (Other test methods acceptable in Connecticut are the California Air Resources Board (CARB) PV Vent Cap Test Procedure and other methods approved by the Connecticut DEP.)

#### **Applicability**

The PV Vent cap test procedure is applicable for all stage II systems having a required pressure setting of 3 +/- 0.5" water column (w.c.) (ie: between 2.5 and 3.5" w.c.), and vacuum 8 +/- 2" w.c. (ie: between 6 and 10" w.c.) as required by Connecticut regulations.

#### **Test Apparatus**

The test apparatus consists of a pipe section to fit the vent cap. The apparatus must be adaptable to a compressed gas supply and have a gauge or gauges capable of reading +5 to -10" of water column readable to 1/4 of an inch. A vacuum transducer pump may be used to test the vacuum setting. This device utilizes flow from a compressed gas supply to create the vacuum. See Figures III-3 and III-4.

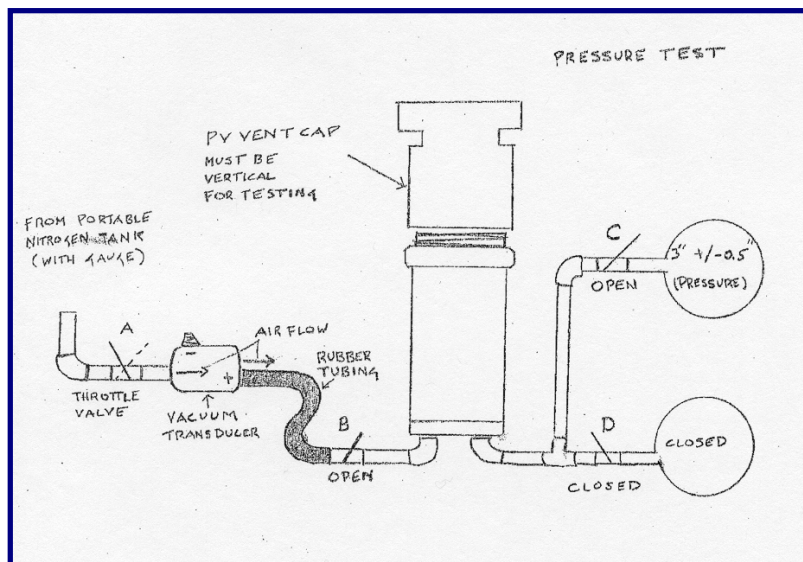
#### **Pre-test Procedures**

- a. Remove the cap from the vent stack and inspect for obvious damage.
- b. If necessary, realign the poppets by pushing/pulling the stems approximately 1/4" and releasing.
- c. Attach the PV vent cap to the test assembly, assuring it is in a vertical position.
- d. All PV vent caps shall be tested.

### **Pressure Test Procedures**

- a. Connect the rubber tubing from the test assembly at valve 'B' to the positive (+) pressure outflow of the vacuum transducer.
- b. Connect an air pressure source, such as an air tank with a gauge, to the test assembly making sure that all valves (A-D) are closed.
- c. Isolate the pressure pathway leaving valves 'A' and 'D' closed while placing 'B' and 'C' in the open position.
- d. Using the throttle valve 'A', slowly introduce compressed air at a delivery pressure of less than one psig.
- e. Monitor the pressure gauge for the point when the vent cap relieves. The relief pressure should be within  $\pm 0.5$ " w.c. of system requirements.
- f. Record the PV vent cap test results on your test documentation.

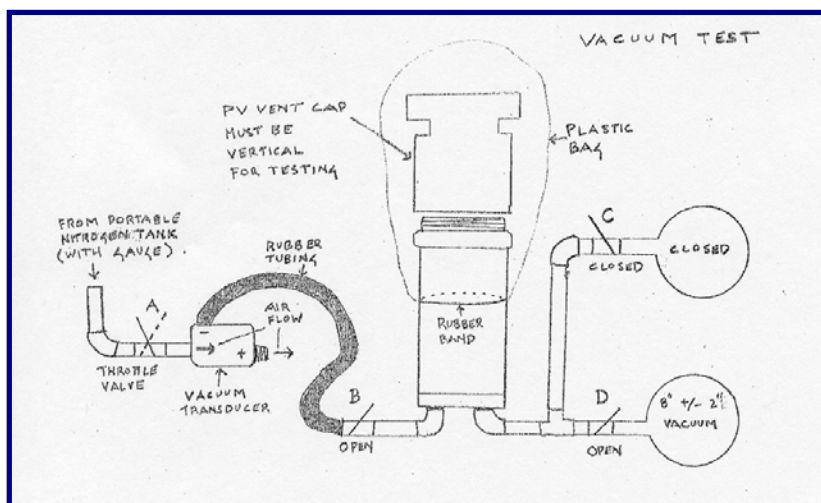
**Figure III-3**



### Vacuum Test Procedures

- a. Connect the rubber tubing from the test assembly at valve 'B' to the negative (-) pressure inflow of the vacuum transducer.
- b. Place an air-tight plastic bag over PV vent cap and secure it to the test assembly using a rubber band. Excess air should be squeezed out of the bag so that it is not loose around the PV vent cap and test assembly.
- c. Connect an air pressure source, such as an air tank with a gauge, to the test assembly making sure that all valves (A – D) are closed.
- d. Isolate the vacuum pathway by leaving valves 'A' and 'C' closed while placing valves 'B' and 'D' in the open position.
- e. Using the throttle valve 'A', slowly initiate compressed air-flow and increase as necessary to create a vacuum as shown on the vacuum gauge.
- f. While slowly increasing the vacuum, monitor the plastic bag covering the PV vent cap for the point where the PV vent cap releases and the bag begins to contract. Note the vacuum reading on the gauge when the vent cap releases, which should be within  $\pm 2''$  w.c. of system requirements.
- g. Record the PV vent cap test results on your test documentation.

**Figure III-4**



Note: A PV vent cap that fails *either* test may be cleaned and/or adjusted if the device was designed to be serviceable. Units that were not designed to be serviceable must be replaced.

### **When must the PV vent testing be performed?**

When new PV vent caps are installed at existing dispensing facilities, the owner or operator shall pressure test and vacuum test the vent cap as part of the next stage II system test. For new dispensing facilities the initial stage II system test shall be conducted prior to dispensing gasoline. Subsection 22a-174-30(e)(1) of the Regulations of Connecticut State Regulations requires that a full system test be conducted every three years after November 14<sup>th</sup> 2004, and after any major modification as defined in Section 22a-174-30(a)(5)(A) through (D). (Note: The testing frequencies for all Stage II tests are different than those found in the California Air Resources Board (CARB) executive order. The CARB requirements do not apply to the testing frequency in Connecticut.)

### **For More Information**

Contact the CT DEP Clean Air Hotline at 800-249-1234.